UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/784,674	02/15/2001	Karen W. Shannon	10971464-3	3167

22878 7590 10/17/2006

AGILENT TECHNOLOGIES INC.
INTELLECTUAL PROPERTY ADMINISTRATION, M/S DU404
P.O. BOX 7599
LOVELAND, CO 80537-0599

EXAMINER	
NEGIN, RUSSELL SCOTT	
ART UNIT	**PAPER NUMBER**
1631	

DATE MAILED: 10/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/784,674	SHANNON ET AL.	
	Examiner	Art Unit	
	Russell S. Negin	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 July 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-25,27-40 and 102-165* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-25,27-40 and 102-165* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Comments

Claims 1, 2, 4-25, 27-40, and 102-165 are examined in this Office action.

Claim Objections

Claim 146 objected to because of the following informalities:

In step (d), the phrase, "means or controlling said computer system," should read, "means for controlling said computer system."

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2, 11, 39, 40, 102-121, 123, 142-143, 148-156, and 158 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2, 11, 39, 40, 102-121, 123, 142-143, 148-156, and 158 each have a step of ranking oligonucleotide clusters based on their size. However, it is unclear and ambiguous as to whether the clusters are ranked based on how many members of the cluster exist, or whether the clusters are ranked based on the oligonucleotide size

(number of base pairs or length of each oligonucleotide within the cluster). The metes and bounds for this set of claims needs to be clarified.

Claim Rejections - 35 USC § 112 and 35 USC § 101

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 2, 4, 25, 27-40, 102-145, and 148-165 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear as to whether the method steps in claims 1, 2, 4-25, 27-40, 102-145, and 148-165 are executed experimentally or computationally. If the method steps are executed computationally, the following nonstatutory subject matter rejection is enacted.

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1, 2, 4-25, 27-40, 102-145, and 148-165 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Upon further consideration of the recent Official Gazette notice of November 22, 2005, entitled, "Interim Guidelines for examination of patent applications for patent subject matter eligibility," (www.uspto.gov/web/offices/com/sol/og/2005/week47/patgupa.htm), the Office decides to enact this rejection.

In regards to claims 1, 2, 4-25, 27-40, 102-145, and 148-165, the instant claims are drawn to a genetic algorithm. A genetic algorithm is non-statutory unless the claims include a step of physical transformation, or if the claims include a useful, tangible and concrete result. It is important to note, that the claims themselves must include a physical transformation step or a useful, tangible and concrete result in order for the claimed invention to be statutory. It is not sufficient that a physical transformation step or a useful, tangible, and concrete result be asserted in the specification for the claims to be statutory. In the instant claims, there is no step of physical transformation, thus the Examiner must determine if the instant claims include a useful, tangible, and concrete result.

In determining if the instant claims are useful, tangible, and concrete, the Examiner must determine each standard individually. For a claim to be "useful," the claim must produce a result that is specific, substantial, and credible. For a claim to be "tangible," the claim must set forth a practical application of the invention that produces a real-world result. For a claim to be "concrete," the process must have a result that can be substantially repeatable or the process must substantially produce the same result again. Furthermore, the claim must recite a useful, tangible, and concrete result in the claim itself, and the claim must be limited only to statutory embodiments. Thus, if the claim is broader than the statutory embodiments of the claim, the Examiner must reject the claim as non-statutory.

Claims 1, 2, 4-25, 27-40, 102-145, and 148-165 do not produce a tangible result. A tangible result requires that the claim must set forth a practical application to produce

a real-world result. This rejection could be overcome by amendment of the claims to recite that a result of the method is outputted to a display or a memory or another computer on a network, or by including a physical transformation.

As stated in the Official Gazette notice, "The tangible requirement does not necessarily mean that a claim must either be tied to a particular machine or apparatus or must operate to change articles or materials to a different state or thing. However, the tangible requirement does require that the claim must recite more than a Sec. 101 judicial exception, in that the process claim must set forth a practical application of that Sec. 101 judicial exception to produce a real-world result. Benson, 409 U.S. at 71-72, 175 USPQ at 676-77 (invention ineligible because had "no substantial practical application."). "[A]n application of a law of nature or mathematical formula to a . . . process may well be deserving of patent protection." Diehr, 450 U.S. at 187, 209 USPQ at 8 (emphasis added); see also Corning, 56 U.S. (15 How.) at 268, 14 L.Ed. 683 ("It is for the discovery or invention of some practical method or means of producing a beneficial result or effect, that a patent is granted . . ."). In other words, the opposite meaning of "tangible" is "abstract.""

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-2, 11-12, 16-22, 28-29, 37, 39, 40, 102-104, 106-108, 110-112, 119-121, 122-124, 126-128, 130-132, 139-141, 148-151, and 154-156 are rejected under 35 U.S.C. 103(a) as being unpatentable over Southern et al (Nucleic Acids Research, 1994, volume 22, pages 1368-1373) in view of Southern (Current Opinion in Biotechnology, 1996, volume 7, pages 85-88).

Claims 1, 102, 122, and 148 are independent claim methods of selecting a hybridization oligonucleotide to hybridize to a target nucleotide sequence. They involve examining and/or clusters of oligonucleotides in order to predict hybridization efficiencies.

Claims 2, 11, 39, 40 103-104, 106-108, 110-112, 119-121, 123, 148-151, and 154-156 involve using rankings of clusters based on cluster size.

Claim 12 claims and number of members within the clusters.

Claims 16-22 and 130-132 claim the species of oligonucleotide and target molecule (i.e. DNA, RNA, labeled oligonucleotide, or attached to a surface).

Claims 28-29 contain mathematical parameters of correlation data.

Claim 37 and 139-141 claims certain types and properties of clusters.

Claims 124 and 126-128 claim specific types of cluster ranking and properties of the clusters.

The article of Southern et al (1994) entitled, "Arrays of complementary oligonucleotides for analyzing hybridization behaviour of nucleic acids," states in its abstract, "Arrays of oligonucleotides corresponding to a full set of complements of a known sequence can be made in a single series of base couplings in which each base in the complement is added in turn." To elaborate on this study of Southern et al (1994), a later published review by the same author (which is below employed as the secondary reference in this rejection (Southern, 1996)), offers a thorough synopsis of the original article on page 87, paragraph bridging columns 1 and 2:

Dedicated arrays are much smaller than general purpose arrays. The simplest way of representing a known sequence as a set of oligonucleotides is to have one oligonucleotide for each position in the sequence. A sequence of full length N, can be represented in N-s+1 s-mers (where s is the length of the oligonucletide). Thus, existing methods are capable of making arrays that can represent substantial regions of a coding sequence. A simple way to make such a 'scanning' array uses a conventional oligonucleotide synthesizer, in which the reaction cell is replaced by one that is pressed against the surface of the substrate on which synthesis is to take place. The array is created by coupling each base complement of the target sequence in a patch on the surface in the order in which it occurs on the target [citation of Southern, 1994]. After each coupling, the cell is moved along the surface by a small displacement. N coupling steps are needed to create the complete set of oligonucleotides in this way,...

Figure 1 on page 1369 of Southern et al (1994) illustrates such an array of oligonucleotides schematically.

Figures 3 and 4 of Southern et al (1994) illustrate the experimental and computational analysis of the results on pages 1371 and 1372, respectively. The

parameter in Figure 3c indicating extent of hybridization is the color of each ring with respect to the others (i.e., a darker rung represents greater hybridization intensity). Based on this parameter, several clusters of darker colors are present in Figure 3c. Figure 3c also illustrates (through numbers with arrows) specific oligonucleotides in the subsets that are hybridizable to the target nucleotide sequences. As is stated in the caption to Figure 3 on page 1371 of Southern et al (1994):

Figure 3. Hybridisation of an oligopyrimidine and a RNA to scanning arrays. a. Hybridisation of a sequence of pyrimidines,... to an arrays of complementary oligopurines based on the sequence,... b. Hybridisation of a 528-base transcript of exon 10 of the CFTR gene to an array representing bases 287-305,... In both experiments, the reaction cell was 30 nm diameter and the offset 3 mm, giving rise to decanucleotides along the center line. c. The hybridization pattern shown in 3b has unexpected features. Coupling started on the right of the plate, so the bases in the crescent shape at position 2 are the dinucleotide GG; adding a T in the third position abolishes the 'hybridisation' of the target. Further along the plate, it can be seen that a shift of one position along the sequence can cause a fall from strong to negligible interaction, and in one position, the 7-, 8- and 9-mers all interact more strongly that the 10-mer.

Consequently, the caption and its illustration indicates qualitative ranking between cluster based on both cluster size and lengths of oligonucleotides within the clusters. Subsets of the clusters are selected with the numbered arrows above the picture. The oligonucleotides can be DNA or RNA and they are parts of microarrays as indicated in the title of Southern et al (1994) and the first column of page 1373 of Southern et al (1994).

However, Southern et al (1994) does not teach the step of predicting the hybridization of the oligonucleotide by the presence of said hybridization cluster.

Southern (1996), entitled, "High density gridding: techniques and applications," states in the section, "Dedicated oligonucleotide arrays for mutation analysis" on page 87, column 2, lines 4-7, "It is envisaged that dedicated arrays will be useful for mutation detection. Comparison of the hybridization patterns of wild-type and mutant sequences to an array of oligonucleotides complementary to the wild type will reveal a difference."

It would have been obvious to someone of ordinary skill in the art at the time of the instant invention to modify the complementary arrays of Southern et al. (1994) with the mutation detection method of Southern (1996), because while both methods use the same method of staggered hybridization and the senior study cites the junior study as its method of use, Southern (1996) has the advantage of employing the techniques of Southern et al (1994) for mutation analysis. Furthermore, it would be obvious to use the numerical parameters and ranges as described in claims 27 and 28 as they are obvious variants of the conventionally employed methods.

Claims 1, 11, 13-14, 122, 126, 128, and 148-149 are rejected under 35 U.S.C. 103(a) as being unpatentable over Southern et al (1994) in view of Southern (1996) as applied to claims 1-2, 11-12, 16-22, 28-29, 37, 39, 40, 102-104, 106-108, 110-112, 119-121, 122-124, 126-128, 130-132, 139-141, 148-151, and 154-156 above, and further in view of Southern et al [Genomics, 1992, volume 13, pages 1008-1017].

Claims 13, 14, 128 and 149 claim statistically sampling a cluster of oligonucleotides.

Claims 25 and 27 claims use and optimization of dimensionless numbers to score the ranks of hybridization.

While Southern et al (1994) in view of Southern (1996) teach the methods of claims 1-2, 11-12, 16-22, 28-29, 37, 39, 40, 102-104, 106-108, 110-112, 119-121, 122-124, 126-128, 130-132, 139-141, 148-151, and 154-156, they do not teach the method of statistical sampling with dimensionless numbers as required by the instant claims.

The article of Southern et al (1992), entitled, "Analyzing and comparing nucleic acid sequences by hybridization to arrays of oligonucleotides: evaluation using experimental models," illustrates on page 1013 in Tables I and II ranks of clusters illustrated in Figure 5 on page 1013 of Southern et al (1992) ranks and dimensionless scores of sequences within each cluster.

It would have been obvious at the time of the instant invention to modify Southern et al (1994) in view of Southern (1996) as applied to claims 1-2, 11-12, 16-22, 28-29, 37, 39, 40, 102-104, 106-108, 110-112, 119-121, 122-124, 126-128, 130-132, 139-141, 148-151, and 154-156 above, in further view of Southern et al (1992) to result in the instant invention because Southern (1992) has the advantage of quantitative ranking for more efficient genomic analysis. It would be further obvious to determine the quartile of the intensities of each of the hybridizable oligonucleotides as each hybridizable nucleotide is a member of a quartile..

Claims 1, 10, 15, 102, 109, 122, 129, 142, 143-145, 146-148, and 153 are rejected under 35 U.S.C. 103(a) as being unpatentable over Southern et al (1994) in view of Southern (1996) as applied to claims 1-2, 11-12, 16-22, 28-29, 37, 39, 40, 102-104, 106-108, 110-112, 119-121, 122-124, 126-128, 130-132, 139-141, 143, 145, 148-

151, and 154-156 above, and further in view of Drmanac et al [Genomics, volume 4, pages 114-128, 1989].

Claims 10, 15, 109, 129, 142, 143-145, 146-147, and 153 teach mathematical, theoretical and computational transformations which require theoretical considerations and computational equipment.

While Southern et al (1994) in view of Southern (1996) teach the methods of claims 1-2, 11-12, 16-22, 28-29, 37, 39, 40, 102-104, 106-108, 110-112, 119-121, 122-124, 126-128, 130-132, 139-141, 148-151, and 154-156, and use manufactured microarrays, they do not teach the computational and theoretical aspects of the invention.

The article of Drmanac et al, entitled, "Sequencing of megabase plus DNA by hybridization: theory of the method," states in the abstract that a similar type of staggered DNA analysis is employed as in the Southern references (i.e. see Figure 1), but now the method is theoretical rather than experimental and computer power is necessary. As stated in lines 30-35 of the abstract, "The sequence can be derived from simple primary data only by extensive computing. Phased experimental tests and computer simulation increasing in complexity are needed before accurate estimates can be made..."

It would have been obvious at the time of the instant invention to modify Southern et al (1994) in view of Southern (1996) as applied to claims 1-2, 11-12, 16-22, 28-29, 37, 39, 40, 102-104, 106-108, 110-112, 119-121, 122-124, 126-128, 130-132, 139-141, 148-151, and 154-156 above, in further view of Drmanac et al to result in the

instant invention because Drmanac et al has the advantage of applying the same hybridization, for theoretical analyses and predictions.

Claims 1, 5-7, 23-24, 30-36, 38, 102, 105, 113-118, 122, 125, 133-138, 148, 152, 157-162, 164-165 are rejected under 35 U.S.C. 103(a) as being unpatentable over Southern et al (1994) in view of Southern (1996) as applied to claims 1-2, 11-12, 16-22, 28-29, 37, 39, 40, 102-104, 106-108, 110-112, 119-121, 122-124, 126-128, 130-132, 139-141, 148-151, and 154-156 above, and further in view of Petersheim et al [Biochemistry, 1983, volume 22, pages 256-263].

Claims 5-7, 23-24, 30-36, 105, 114-118, 125, 134-138, 152, 157, 162, and 164-165 include specific thermodynamic parameters for calculations.

Claims 38, 113, and 133 claim include thermodynamic cut-off values.

While Southern et al (1994) in view of Southern (1996) teach the methods of claims 1-2, 11-12, 16-22, 28-29, 37, 39, 40, 102-104, 106-108, 110-112, 119-121, 122-124, 126-128, 130-132, 139-141, 148-151, and 154-156, they do not teach the thermodynamic parameters and cut-off values present in the instant claims.

The article of Petersheim et al, entitled, "Base-stacking and base-pairing contributions to helix stability: thermodynamics of double-helix formation with CCGG, CCGGp, CCGGAp, ACCGGp, CCGGUp, and ACCGGUp," states in the first sentence of the introduction, "Due to development of rapid sequencing techniques, there has been an explosion in our knowledge of nucleic acid sequences. This understanding provides a foundation for understanding the functions and mechanisms of these macromolecules."

Equations 1 through 5 on page 257 of Petersheim et al provide the guidelines behind the thermodynamic parameters (free energy, melting temperature, entropy, and enthalpy) of duplex formation shown in Figures 2-6 on page 258-259 of Petersheim et al. Figure 2 et al of Petersheim et al even displays in a sigmoidal curve the cutoff parameters for melting point (i.e. the ranges at which no conformational transitions occur).

It would have been obvious at the time of the instant invention to modify Southern et al (1994) in view of Southern (1996) as applied to claims 1-2, 11-12, 16-22, 28-29, 37, 39, 40, 102-104, 106-108, 110-112, 119-121, 122-124, 126-128, 130-132, 139-141, 148-151, and 154-156 above, in further view of Petersheim et al to result in the instant invention because Petersheim et al has the advantage of using thermodynamics to analyze structure and function of the same types of duplexes employed in the microarrays of Southern et al. It would have been further obvious to employ the ranges shown in the claims (i.e. claims 31-35), as the hybridization process is analogous for oligonucleotides of any given length and location.

Claims 157 and 163 are rejected under 35 U.S.C. 103(a) as being unpatentable over Southern et al (1994) in view of Southern (1996) in view of Petersheim et al as applied to claims 1, 5-7, 23-24, 30-36, 38, 102, 105, 113-118, 122, 125, 133-138, 148, 152, 157-162, 164-165 above, and further in view of Drmanac et al.

Claims 157 and 163 include specific computational requirements.

While Southern et al (1994) in view of Southern (1996) in view of Petersheim et al teach the methods of claims 1, 5-7, 23-24, 30-36, 38, 102, 105, 113-118, 122, 125,

133-138, 148, 152, 157-162, 164-165, they do not teach the computational requirements of the instant claims.

The article of Drmanac et al, entitled, "Sequencing of megabase plus DNA by hybridization: theory of the method," states in the abstract that a similar type of staggered DNA analysis is employed as in the Southern references (i.e. see Figure 1), but now the method is theoretical rather than experimental and computer power is necessary. As stated in lines 30-35 of the abstract, "The sequence can be derived from simple primary data only by extensive computing. Phased experimental tests and computer simulation increasing in complexity are needed before accurate estimates can be made..."

It would have been obvious at the time of the instant invention to modify Southern et al (1994) in view of Southern (1996) in view of Petersheim et al as applied to claims 1, 5-7, 23-24, 30-36, 38, 102, 105, 113-118, 122, 125, 133-138, 148, 152, 157-162, 164-165 above, in further view of Drmanac et al to result in the instant invention because Drmanac et al has the advantage of applying the same hybridization, for theoretical analyses and predictions.

Claims 1 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Southern et al (1994) in view of Southern (1996) as applied to claims 1-2, 11-12, 16-22, 28-29, 37, 39, 40, 102-104, 106-108, 110-112, 119-121, 122-124, 126-128, 130-132, 139-141, 143, 145, 148-151, and 154-156 above, and further in view of McMahon et al [US Patent 5,310,650].

Claims 8 and 9 claim kinetic properties and coupling efficiencies of the hybridizations.

While Southern et al (1994) in view of Southern (1996) teach the methods of claims 1-2, 11-12, 16-22, 28-29, 37, 39, 40, 102-104, 106-108, 110-112, 119-121, 122-124, 126-128, 130-132, 139-141, 148-151, and 154-156, they do not teach the kinetic properties and coupling efficiencies of the reactions.

The invention of McMahon et al, entitled, "Method and device for improved reaction kinetics in nucleic acid hybridizations," teaches kinetics and coupling efficiencies of hybridizations in column 13 (Table 1) for improved binding assays.

It would have been obvious at the time of the instant invention to modify Southern et al (1994) in view of Southern (1996) as applied to claims 1-2, 11-12, 16-22, 28-29, 37, 39, 40, 102-104, 106-108, 110-112, 119-121, 122-124, 126-128, 130-132, 139-141, 148-151, and 154-156 above, in further view of McMahon et al because McMahon et al applies to hybridizations methods the use and study of both kinetics and hybridization efficiencies from a more efficient and improved assay.

Conclusion

No claim is allowed.

Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the central PTO Fax Center. The faxing of such pages must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993)(See 37 CFR § 1.6(d)). The Central PTO Fax Center Number is (571) 273-8300.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russell Negin, Ph.D., whose telephone number is (571) 272-1083. The examiner can normally be reached on Monday-Friday from 7am to 4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Andrew Wang, Supervisory Patent Examiner, can be reached at (571) 272-0811.

Any inquiry of a general nature or relating to the status of this application should be directed to Legal Instrument Examiner, Yolanda Chadwick, whose telephone number is (571) 272-0514.

Information regarding the status of the application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information on the PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RSN
16 October 2006

16 October 2006

JOHN S. BRUSCA, PH.D
PRIMARY EXAMINER